

REMARKS

The acknowledgment of the claim of priority under 35 U.S.C. §119 and receipt of the priority document is noted with appreciation.

In a separate letter, corrected drawings for Figures 24 and 26 (but not Figure 25, which already bears the legend) with the legend –PRIOR ART– are being submitted in response to the Examiner's requirement.

Claims 1 to 28 appear in the application. The indication that claims 10 and 27 are drawn to allowable subject matter is noted with appreciation. Claims 10, 11 and 28 have been amended to correct minor typographical errors. Claim 17 has been amended to add a definition for the acronym "ATM" (see page 15 of the specification). Claims 1 and 12 have been amended to better emphasize the point of patentable novelty of the invention.

Claim 10 was objected to for a misspelling of the word "event" on line 11. The error has been corrected by this amendment.

Claims 1 to 11 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner noted that on line 7 of claim1, the phrase "a plurality of network unit" was confusing. The phrase in question has been corrected to read "a plurality of network units". As corrected, it is believed that the claims are no longer subject to the rejection.

Claims 1 to 4, 12, 15, 16, 19 to 21 and 28 were rejected under 35 U.S.C. §102(e) as anticipated by the Admitted Prior Art Figures 24 to 26. This rejection is respectfully traversed for the reason that the Admitted Prior Art neither shows nor suggests the claimed invention.

As clearly set forth in the specification, the Admitted Prior Art has certain disadvantages which the disclosed and claimed invention solve. Fig. 24 shows the basic arrangement of a PON (Passive Optical Network) system. Figs. 24 and 25 show dual arrangements designed to ensure the reliability of a PON system.

In each of the dual arrangements of the conventional PON systems shown in Figs. 25 and 26, however, even if a fault occurs in only the

transmission/reception 103-1a of the 0-system ONU 107-1, which is part of the PON system, the overall PON system must be simultaneously switched from the 0-system to the 1-system in order to restore a path under communication. That is, switching is performed even for the ONUs 107-2 to 107-n that are operating normally. As a result, the communication quality deteriorates due to short breaks and the like caused in this operation. This is because in each of the arrangements of the conventional PON systems shown in Figures 25 and 26, the active and standby systems are physically discriminated from each other, and the standby system cannot be used until it is selected by the SEL 105. In addition, the active system is switched to the standby system by only interchanging the physical transmission paths, and only the same connection as the preceding connection is restored.

The claimed invention provides a protection switching method and apparatus for a PON system, which can easily switch only a path to be restored to a standby-system path without affecting communication through normal virtual paths in the PON system. In the claimed method, when a communication abnormality in at least one active-system virtual path established between the optical line terminal and the subscriber terminal through the transmission path and the network unit is detected, only the switch to switch the transmission paths to establish a standby-system virtual path between that optical line terminal and the subscriber terminal serving as a communication partner is switched, without affecting communication through normal virtual paths in the PON system.

To emphasize the difference between the Admitted Prior Art and the claimed invention, claim 1 has been amended to recite, “upon detection of a communication abnormality in the active-system virtual path, causing said switch to switch only the transmission paths to establish a standby-system virtual path between said optical line terminal and said subscriber terminal serving as a communication partner, without affecting communication through normal virtual paths in the PON system”. Similarly, claim 12 has been amended to recite “a first control section which is arranged in said optical line terminal to control said

switch, upon detection of a communication abnormality in the transmission path, so as to switch only the abnormal transmission path to a normal transmission path without affecting communication through normal virtual paths in the PON system, thereby reestablishing a virtual path to said subscriber terminal in which the communication abnormality has occurred, the virtual path being constituted by an active-system virtual path and a standby-system virtual path.” As amended, independent claims 1 and 12, and the claims dependent thereon, clearly define over the Admitted Prior Art, and withdrawal of the rejection is therefore requested.

Claims 13 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Admitted Prior Art. This rejection is also respectfully traversed for the reason that the Admitted Prior Art does not suggest the claimed invention.

As pointed out above and further emphasized by the amendments to independent claims 1 and 12, the Admitted Prior Art does not disclose all the claim limitations as alleged by the Examiner. Further, not only does the Admitted Prior Art “not expressly disclose the transmission path is formed from a metal line or a coaxial cable”, as admitted by the Examiner, there is no suggestion of this in the Admitted Prior Art.

Claims 5 to 9 and 22 to 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Admitted Prior Art in view of U.S. Patent No. 5,838,924 to Anderson et al. This rejection is also respectfully traversed for the reason that the combination of the Admitted Prior Art and the patent to Anderson et al. do not suggest the claimed invention.

Again as pointed out above and further emphasized by the amendments to independent claims 1 and 12, the Admitted Prior Art does not disclose all the claim limitations as alleged by the Examiner. Further, not only does the Admitted Prior Art “not expressly disclose the active virtual path and the standby virtual path in different bands; and the second active virtual path and the second standby virtual path to share a band assigned to the first active virtual paths”, as admitted

by the Examiner, there is not suggestion of this in the Admitted Prior Art. The Examiner relies on Anderson et al. for a teaching “that the protection channel bandwidth is not reserved and may be shared by several working connections (column 5, lines 22-34)”. The Examiner has taken the cited passage of Anderson et al. out of context. This “teaching” by Anderson et al. does not suggest “setting an active-system virtual path and a standby-system virtual path between said optical line terminal and said subscriber terminal in *different* bands” (emphasis added) as recited, for example, in claim 5.

Claims 17 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Admitted Prior Art in view of U.S. Patent No. 5,455,701 to Eng et al. This rejection is also respectfully traversed for the reason that the combination of the Admitted Prior Art and the patent to Eng et al. does not suggest the claimed invention.

Again, as pointed out above and further emphasized by the amendments to independent claims 1 and 12, the Admitted Prior Art does not disclose all the claim limitations as alleged by the Examiner. The Examiner does, however, admit that the Admitted Prior Art does not disclose the switch outputs in accordance with a header value added to an ATM cell. For this, the Examiner relies on the patent to Eng et al. which discloses a packet switching apparatus. However, Eng et al. is not a “protection switching apparatus for a PON system” as specifically recited in independent claim 12, and even if the teachings of Eng et al. could be combined with the Admitted Prior Art, it would not result in the claimed invention.

The prior art made of record but not relied upon has been reviewed; however, the prior art is not believed to be relevant to the claimed invention for the reasons advanced above.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1 to 9, 11 to 26, and 28 be allowed with claims 10 and 27, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for

allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "C. Lamont Whitham", is written over the typed name.

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